

## THE SPIDER GENUS *TINUS* (PISAURIDAE)\*

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This paper is the third in a series of generic revisions of the pisaurids of the western hemisphere. It represents the first attempt to bring together all published information with the results of an extensive examination of all available collections of the genus. For those workers who are particularly interested in the fauna of the continental United States, *Tinus* is one of four pisaurid genera found in the area. *Dolomedes* and *Pisaurina* were revised earlier (1973 & 1972 resp.) and *Trechalea* is in progress.

Unfortunately there are no published accounts of the natural history of any *Tinus* species. Based on a few labels with *T. nigrinus* specimens and the author's sketchy observations, it seems that the habitat is quite similar to *Dolomedes*, i.e. on the faces of rocks and tree trunks, and in trash or vegetation near the margins of bodies of fresh water. The female carries the spherical egg sac in a typical pisaurid manner by holding it with the chelicerae and a thread from the spinnerets. The egg sac is white, opaque or translucent when new, and usually darkens to a brownish color with age. Only nursery webs for *T. nigrinus* and *T. ursus* are known, and their descriptions are given in the Natural History sections of each species.

The superficial body shape, eye patterns, and biology of *Tinus* suggest an affinity with *Dolomedes*. There is also a superficial resemblance to *Thaumasia*; but whether *Tinus* might be a subgenus of the latter as Gertsch suggests (1940) is a matter that must await a revision of that genus. In any case, *Tinus* is clearly a group distinct from all other pisaurids studied and is strictly limited in its distribution to southern North America, from the southwestern United States southward to Costa Rica in Central America.

Too little is known about the genus to confidently trace its phylogeny, but the apparently restricted distributions of four of the seven species suggests the kind of stream isolation situation described earlier for *Dolomedes* (Carico, 1973).

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*Tinus* F. Pickard-Cambridge

*Tinus* Pickard-Cambridge, F., 1901, Biol. Centrali-America, 2:310. Type by monotypy, *Tinus nigrinus* F. Pickard-Cambridge.

*Description.* *Carapace:* moderately high, longer than wide. *Eyes:* posterior row moderately recurved, PE subequal and larger than AE, PME closer to each other than to PLE; anterior row slightly procurved, AME larger than ALE and closer to them than to each other, ocular quadrangle wider at top than at bottom and higher than height of clypeus. *Sternum:* lanceolate, about as long as wide. *Chelicerae:* moderately robust with three promarginal, three retro-marginal teeth on fang furrow. *Legs:* spinose, unmodified, III shortest, I, II, IV subequal. *Abdomen:* longer than wide, greatest width at the middle, slightly overlaps posterior edge of carapace. MALE. *Pedipalp:* median apophysis spatulate, membranous, usually white, directed anteriorly; *conductor* conspicuous, spatulate, directed anteriorly, located laterally; *embolus* long, slender, coiled 3-5 times; *tegulum* membranous, screw-shaped with 3-6 lamellae visible; *tibial apophysis* arises dorsally, bends retrolaterally, sometimes bifid with a dorsal spur. FEMALE. *Epigynum:* pair of lateral hemispherical elevations, median elevation present or absent. *Internal copulatory apparatus:* variable.

*Note:* Body conformations and eye characteristics among the various species are quite uniform and offer few useful diagnostic characters. The different relative overall sizes of some species, measured in carapace length, is an obvious exception.

The dorsal color pattern of most species also offers little help because of the variability within each species and the overlapping of the characteristic features of the pattern. A "typical" color pattern can be exemplified by that of *Tinus peregrinus* (Fig. 2). The cara-

pace has a median dark band with a submarginal, variably distinct, light band. The dorsum of the abdomen has a median dark band with a characteristic outline, notably a deep indentation on each side, bordered by a light band which is lightest in the indentations of the median band.

The following descriptions of each species, therefore, will not deal with the details of those features shared by most species. Characteristics of the genitalia are the most useful for identification. No attempt was made to distinguish juveniles because of the lack of adequate material.

#### UNCERTAIN SPECIES

*Dolomedes minor* Banks, 1898, Proc. California Acad. Sci., 3rd series, 1(7):277, pl. 17, fig. 6. Bonnet, 1959, Bibliographia Araneorum, 2:1534. *D. minoratus* nomen novum, Roewer, 1954, Katalog der Araneae, 2(a):133. Type localities in Mexico are: San Jose del Cabo, Sierra San Lazaro (Baja California del Sur); Guaymas (Sonora); Tepic (Nayarit). All of Banks' specimens were destroyed in the Great San Francisco Earthquake. From his description of the abdomen and figures of the male and female genitalia, it is clear that this is a *Tinus*. It is not certain whether it is *T. peregrinus*, as I stated earlier (1973), or *T. nigrinus* which also is probably found in the area. Only specimens from all his localities will help resolve the problem. If *D. minor* should prove to be synonymous with *T. peregrinus*, then the latter name will be invalidated.

#### KEY TO ADULTS OF SPECIES OF *TINUS*

1. Males . . . . . 2
- Females . . . . . 6
2. Length of the carapace less than 4.0 mm; carina on the anterior-medial margin of the chelicerae . . . . . *Tinus minutus*
- Length of the carapace more than 4.0 mm; no carina on chelicerae . . . . . 3
3. Conspicuous, curved, dorsal spur arising from the bifid tibial apophysis . . . . . 4
- Tibial apophysis not bifid . . . . . 5
4. Three lamellae on tegulum (Fig. 12) . . . . . *Tinus tibialis*
- Six lamellae on tegulum (Fig. 16) . . . . . *Tinus palictus*

5. Three lamellae on tegulum; median apophysis small, not expanded distally (Fig. 10) . . . . . *Tinus peregrinus*  
 Five lamellae on tegulum; median apophysis large, expanded distally (Fig. 8) . . . . . *Tinus nigrinus*
6. Length of carapace less than 4.2 mm . . . . . 7  
 Length of carapace more than 4.2 mm . . . . . 8
7. Pair of conspicuous oval atria in epigynum (Fig. 30); carapace length more than 3.3 mm . . . . . *Tinus ursus*  
 No conspicuous oval bursal openings present in epigynum (Fig. 24); carapace length less than 3.3 mm . . . . . *Tinus minutus*
8. Median elevation of epigynum absent (Fig. 20) . . . . .  
 . . . . . *Tinus peregrinus*  
 Median elevation of epigynum present . . . . . 9
9. Median elevation of epigynum about half width of epigynum; lateral elevations widely separated (Fig. 26) . . . . .  
 . . . . . *Tinus prusius*  
 Median elevation of epigynum distinctly less than half width of epigynum; lateral elevations not widely separated . . . . .  
 . . . . . 10
10. Median elevation of epigynum widely separated from lateral elevations (Fig. 22) . . . . . *Tinus tibialis*  
 Median elevation of epigynum not widely separated from lateral elevations . . . . . 11
11. Bursa copulatrix extends from its anterior origin into area of epigynum (Fig. 29) . . . . . *Tinus palictus*  
 Bursa copulatrix extends from its anterior origin to about midway in epigynum (Fig. 19) . . . . . *Tinus nigrinus*

*Tinus nigrinus* F. Pickard-Cambridge

Figures 1, 8, 9, 18, 19: Map 1

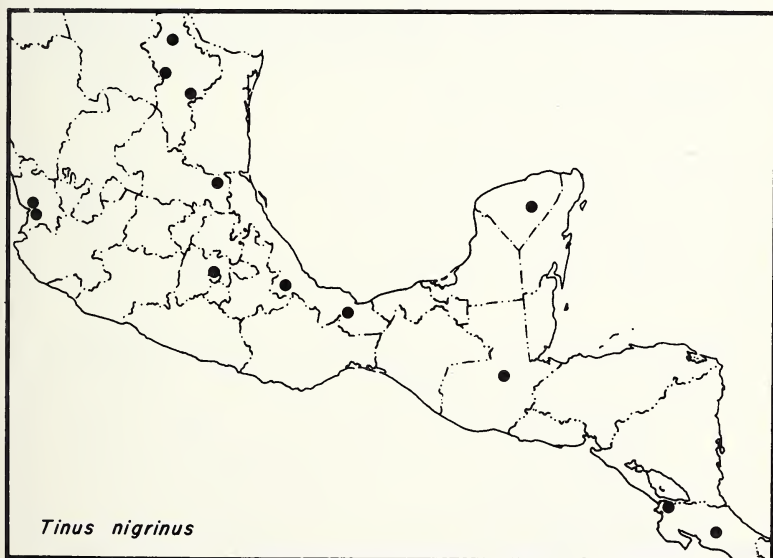
*Tinus nigrinus* F. Pickard-Cambridge, 1901, Biol. Centrali-America, no. 2:304, 310, 311, pl. 30, figs. 8, 8a, 8b, 9. Male holotype and female paratype from Guatemala in British Museum (Natural History), examined. Simon, 1903, Hist. nat. Araignées, 2:1045. Roewer, 1954, Katalog der Araneae, 2(a):142. Bonnet, 1959, Bibliographia Araneorum 2(5):4622.

*Diagnosis.* The male palpus of this species shares only with *T. peregrinus* the narrowed tip of the conductor, but is distinguished from the latter by a distinctly larger median apophysis and a small, distinct tubercle on the prolateral medial margin of the cymbium.

The epigynum of both *T. nigrinus* and *T. palictus* share the similar characteristic of a small, free, anterior median elevation. The length of the bursae copulatrix, as seen ventrally, provides the surest separation of the females of these two species.

*Description.* *Carapace:* average length of males 6.4 mm (6.0-7.9, N=4), average length of females 5.73 mm (4.5-6.7, N=18); broad, dark, median band; light submarginal bands. *Legs:* (1-2-4)-3. *Abdomen:* median band with typical shape (Fig. 1). *MALE. Pedipalp:* (Figs. 8, 9) *tibial apophysis* broad, arises apically on dorsal side, bends laterally, terminates in two tubercles; *conductor* narrowed apically; *median apophysis* rounded, conspicuous, semitransparent, widest apically; *tegulum* with 5 distinct lamellae; *cymbium* with distinct tubercle on polateral margin near base of conductor. *FEMALE. Epigynum:* (Fig. 18) *lateral elevations* hemispherical, broadly in contact; *median elevation* free, anterior to lateral elevations. *Internal copulatory apparatus:* (Fig. 19) *bursae copulatrix* located in anterior half of epigynum; *fertilization tubes* series of conjoined, transparent, flexible lamellae, coiled around a central core.

*Natural History.* Biological data are almost completely absent from labels with museum specimens. The only reference is to



Map 1. Distribution of *Tinus nigrinus* F. Pickard-Cambridge.

"sweeping stream vegetation" and the occasional mention of a stream name. I have collected this species in Nuevo Leon while searching for *Dolomedes*. Like *Dolomedes* it is found among rocks along the stream, perched head down but higher from the water. One female with an egg sac was taken from a sheet web under a boulder. Broken emboli in the female copulatory apparatus and the absence of emboli from some palpal organs indicate that the embolus is often broken during copulation.

A gravid female and egg sacs are with two collections from northern Mexico, dated respectively late September and early August. An egg sac is in a Costa Rican collection dated February.

*Distribution.* Eastern Mexico from Nuevo Leon and Nayarit southward to Costa Rica.

*Material examined.* Six males, 40 females, 20 immatures.

*Tinus peregrinus* (Bishop)

Figures 2, 10, 11, 20, 21; Map 2

*Thaumasia peregrinus* Bishop, 1924, Bull. New York State Mus., 252:62-63, pls. 36, 37. Female holotype from Hot Springs, Arkansas in the New York State Museum, examined. Bishop and Crosby, 1936, Ent. News, 47:243-244. Gertsch and Davis, 1940, American Mus. Novitates, 1059:14.

*Tinus peregrinus*-Gertsch, 1940, (rev. ed. Comstock, 1912, Spider Book), pp. 622, 631, 633, figs. 707, 708. Kaston, 1953, How to Know the Spiders, p. 137.

*Thaumasia peregrina*-Roewer, 1954, Katalog der Araneae, 2(a)141. Bonnet, 1959, Bibliographia Araneorum, 2:4416.

*Diagnosis.* For a comparison between the male palpus of this species and *T. nigrinus*, which it most closely resembles, see the diagnosis of the latter species. The epigynum of the female lacks the median elevation, but may have a dark area between the lateral elevations which might represent the rudiments of the median elevation.

*Description.* *Carapace:* average length of males 5.04 mm (4.3-5.5, N=8), average length of females 6.49 mm (5.0-7.8, N=8); broad, dark, median band; light submarginal bands. *Legs:* (4-2-1)-3. *Abdomen:* median band with typical shape (Fig. 2). *MALE. Pedipalp:* (Figs. 10, 11) *tibial apophysis* broad, arises apically on dorsal side, bends laterally and terminates in two tubercles; *conductor* narrowed apically; *median apophysis* rounded, inconspicuous, not distinctly widest apically, white; *tegulum* with 3 distinct lamellae; *cymbium* with elevation on prolateral margin near base of conductor. FE-

MALE. *Epigynum*: (Fig. 20) *lateral elevations* hemispherical, broadly in contact; no *median elevation* present, median concavity between anterior areas of lateral elevations. *Internal copulatory apparatus*: (Fig. 21) *bursae copulatrix* small, located in central area of epigynum; *fertilization tubes* distinct, relatively short, composed of convolutions located in ventral area of epigynal cavity.

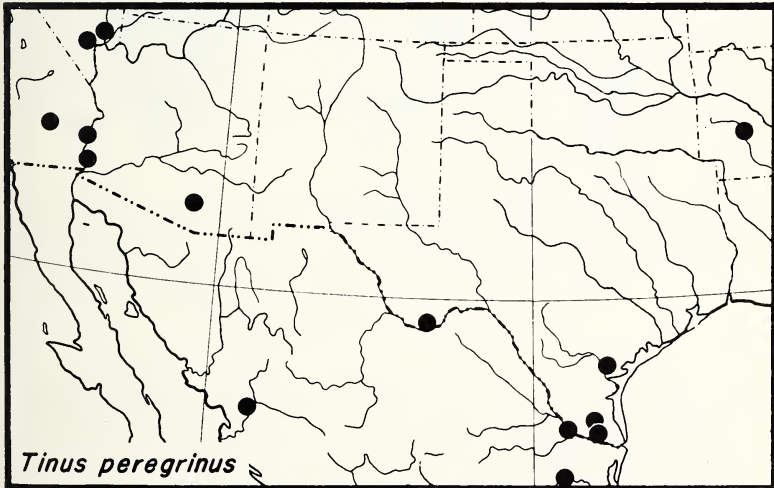
*Natural History*. The labels with the museum specimens provided little information. An occasional reference to a stream and a single collection from the wall of a mine near water is all that is provided. The author has collected adults from southern Texas, where they were found near bodies of water, which is a similar habitat to that of *Dolomedes*.

Egg sacs are in collections from Arizona and Texas, dated late July and early August.

*Distribution*. Southwestern United States from southern California and Nevada through southern Texas to Missouri, and in northern Mexico from southern Sonora to Nuevo Leon.

*Material examined*. Fifteen males, 52 females, and 34 immatures.

*Note*: The state of the type locality, Hot Springs, Arkansas, may be in error. Arkansas seems to be outside the normal range for this species. There are other specimens from Hot Springs, Texas, which is within the range. It is suggested, then, that Texas may be the actual state of the type specimen.



Map 2. Distribution of *Tinus peregrinus* (Bishop).

*Tinus tibialis* F. Pickard-Cambridge  
Figures 3, 12, 13, 22, 23

*Tinus tibialis* F. Pickard-Cambridge, 1901, Biol. Centrali-America, no. 2:310, 311, pl. 30, figs. 10, 10a, 10b, 11. Male holotype and female paratype from Cuernavaca, Mexico in British Museum (Natural History), examined. Roewer, 1954, Katalog der Araneae, 2:142. Bonnet, 1959, Bibliographia Araneorum, 2:4622.

*Diagnosis.* Only *T. tibialis* and *T. palictus* have a bifid tibial apophysis with a conspicuous, dorsal spur. The two are distinguished by the number of lamellae on the tegulum; three for *T. tibialis* and six for *T. palictus*. The epigynum alone has a small, hood-like median elevation that arises from a large atrium which widely separates the median from the lateral elevations.

*Description.* *Carapace:* length of one male 5.5 mm, length of one female 6.0 mm; broad, dark, median band; light submarginal bands. *Legs:* (4-2-1)-3. *Abdomen:* median band with typical shape (Fig. 3). *MALE. Pedipalp:* (Figs. 12, 13) *tibial apophysis* arises dorsally and divided into two distinct parts, one part a dorsal curved spur, knobbed on tip, and a flattened part which bends laterally; *conductor* broad apically; *median apophysis* rounded, conspicuous, semitransparent, widest apically; *tegulum* with three distinct lamellae; *cymbium* with no distinct elevations on prolateral margin. *FEMALE. Epigynum:* (Fig. 22) *lateral elevation* hemispherical, not in contact with each other; small hood-like *median elevation* arises from large median cavity located anterior to lateral elevation. *Internal copulatory apparatus:* (Fig. 23) *bursae copulatrix* large, occupying space in posterior and anterior part of epigynal area; *fertilization tubes* looped, relatively short, located in posterior region of epigynal area.

*Natural History.* No data available.

*Distribution.* Known only from type locality.

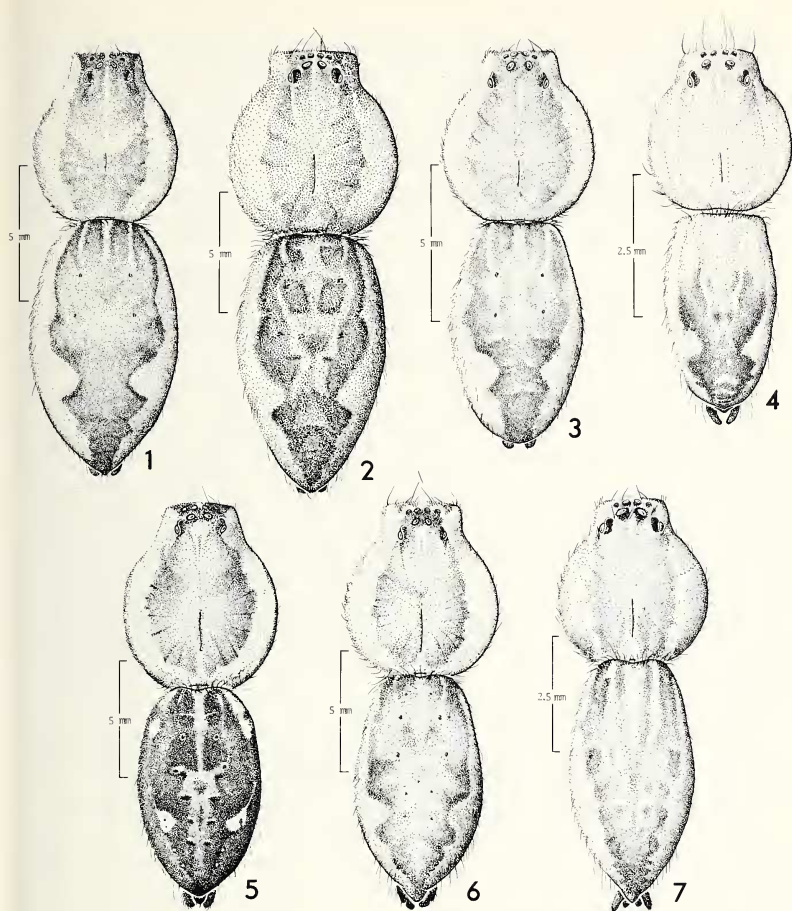
*Material examined.* One male, two females.

*Tinus minutus* F. Pickard-Cambridge  
Figures 4, 14, 15, 24, 25; Map 3

*Tinus minutus* F. Pickard-Cambridge, 1901, Biol. Centrali-America, no. 2:31, 311, pl. 30, fig. 12. Female holotype from Teapa, Tabasco, Mexico in the British Museum (Natural History), examined. Roewer, 1954, Katalog der Araneae, 2(a): 142. Bonnet, 1959, Bibliographia Araneorum, 2(5):4622.

*Diagnosis.* This is the smallest species in the genus with the male carapace length less than 3.5 mm and the female carapace length less





Figures 1-7, Dorsal color patterns of females of species of *Tinus*, Fig. 1, *T. nigrinus* F. Pickard-Cambridge. Fig. 2, *T. peregrinus* (Bishop). Fig. 3, *T. tibialis* F. Pickard-Cambridge. Fig. 4, *T. minutus* F. Pickard-Cambridge. Fig. 5, *T. prusius* n. sp. Fig. 6, *T. palictus* n. sp. Fig. 7, *T. ursus* n. sp.

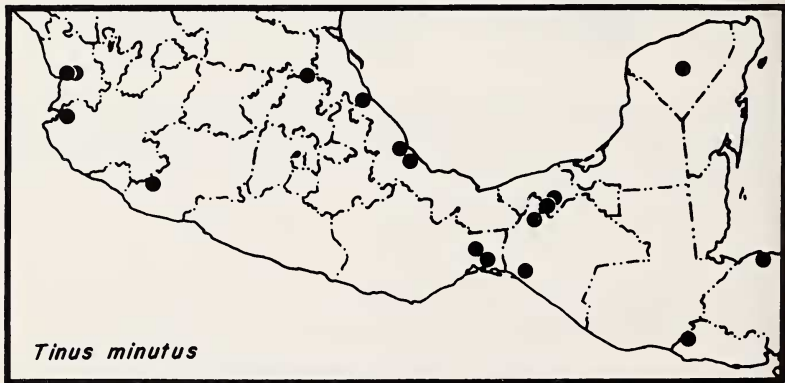
than 3.2 mm. The male palpal tibia has two small tubercles laterally near the margin. The internal copulatory apparatus of the female is relatively large, especially the bursae. Both sexes have a distinct carina on the anterior face of each chelicera.

*Description.* *Carapace:* average length of males 2.99 mm (2.7-3.4, N=8), average length of females 2.89 mm (2.6-3.1, N=8); broad dark median band; narrow light submarginal bands. *Legs:* (1-2-4)-3. *Abdomen:* median band with typical shape, paler anteriorly; pair of converging longitudinal light stripes (Fig. 4). **MALE.** *Pedipalp:* (Figs. 14, 15) *tibial apophysis* broad, arises apically on dorsal side, bends laterally, terminates in a single acute apex; small, acute tubercle near apical tibial margin, prolaterally and retrolaterally; *conductor* broad; *median apophysis* broad, white, mostly hidden behind conductor; *tegulum* with 2 distinct lamellae; *cymbium* with obscure elevation on prolateral margin. **FEMALE.** *Epigynum:* (Fig. 24) *lateral elevations* hemispherical, broadly in contact or opposed; *median elevation* hood-like, indented or rounded posteriorly, in contact with lateral elevations. *Internal copulatory apparatus:* (Fig. 25) *bursae copulatrix* very large, occupying most of epigynal area; *fertilization tubes* flattened, large, closely appressed against bursae.

*Natural History.* No data available.

*Distribution.* From the Mexican states of Nayarit and San Luis Potosi southward to Guatemala and El Salvador.

*Material Examined.* Thirty-four males, 41 females, 15 immatures.



Map 3. Distribution of *Tinus minutus* F. Pickard-Cambridge.

***Tinus prusius* new species**

Figures 5, 26, 27

*Types.* A female holotype, a female paratype, and seven juveniles from Prusia, Chiapas, Mexico, April-May 1942, collected by H. Wagner, in the American Museum of Natural History.

*Etymology.* The name is derived from the name of the type locality.

*Diagnosis.* Both female types have a distinctly dark dorsum with an obscure median dark band and white spots (Fig. 5). The epigynum has a large median hood-like elevation which separates the lateral elevations.

*Description.* *Carapace:* length of holotype 7.6 mm (paratype damaged); broad dark median band; broad light submarginal bands extend laterally almost to margin; clypeus dark except for median white spot. *Legs:* paratype 4-2-1-3 (holotype has first pair missing); color generally dark with light areas on dorsal surfaces of femora, light annuli on segments distal to patella. *Abdomen:* quite dark dorsally and laterally; median band obscure; pair of large white spots anteriorly, and posteriorly (approximately at indentations of median band); two pairs of small white spots posteriorly; median serrated light area posteriorly. *Epigynum:* (Fig. 26) *lateral elevations* widely separated, *median elevation* elevated, broad, emarginated posteriorly, hood-like. *Internal copulatory apparatus:* (Fig. 27) *bursae copulatrix* small, arising from posterior part of median elevation; *fertilization tubes* small, looped tightly against spermatheca.

*Natural History.* No data available.

*Distribution.* Known only from the type locality.

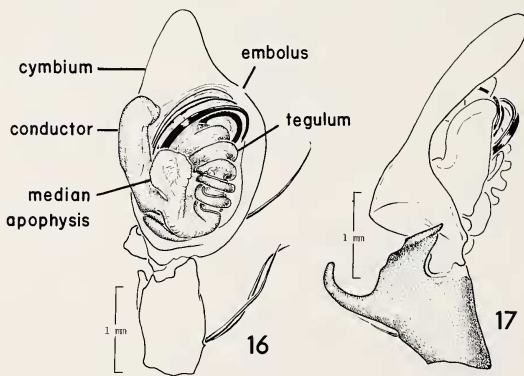
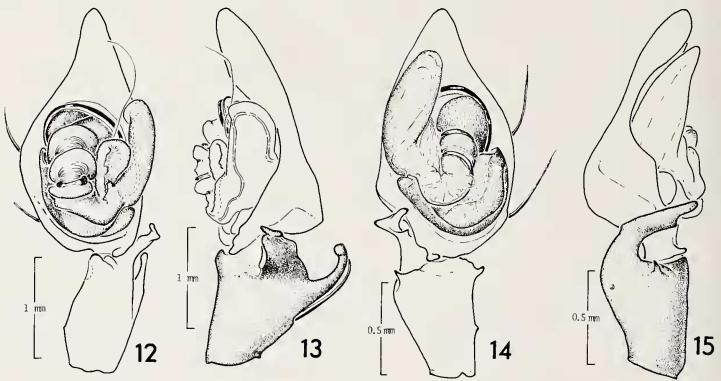
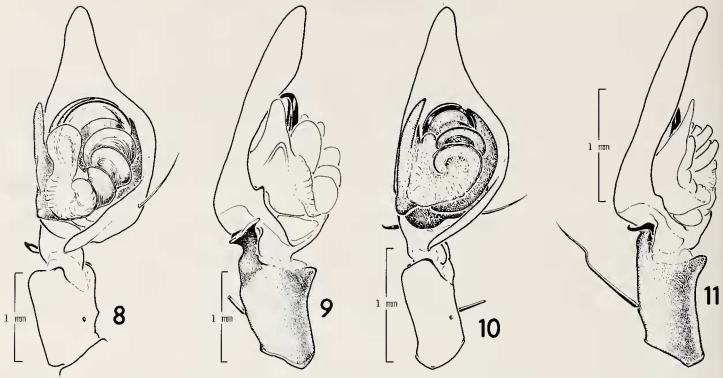
*Material Examined.* Two females, seven juveniles (type collection). Males unknown.

***Tinus palictlus* new species**

Figures 6, 16, 17, 28, 29

*Types.* A male holotype and a female paratype from Palictla, San Luis Potosi, Mexico, 1-5 Sept. 1946, collected by C. M. Bogert, in the American Museum of Natural History.

*Etymology.* The name is derived from the name of the type locality.



*Diagnosis.* See the diagnosis of *T. tibialis* for a comparison with the similar male palpus. The epigynum and internal copulatory apparatus resembles most that of *T. peregrinus*, and one should consult the diagnosis of the latter species for a comparison.

*Description: Carapace:* length of male 7.1 mm, length of female 7.3 mm; broad, dark, median band; wide, submarginal light bands. *Legs:* (2-1)-4-3. *Abdomen:* median band with typical shape (Fig. 6). *MALE. Pedipalp:* (Figs. 16, 17) *tibial apophysis* arises dorsally, divides into two distinct parts, one part a dorsal curved spur, other flattened part bends laterally; *conductor* broad, curved apically; *median apophysis* rounded, conspicuous, semi-transparent, widest apically; *tegulum* with 6 distinct lamellae; *cymbium* with no distinct elevations on prolateral margin. *FEMALE. Epigynum:* (Fig. 28) *lateral elevations* large, elongated, in contact with each other; *median elevation* small, elongated, free, located anteriorly between lateral elevations. *Internal copulatory apparatus:* (Fig. 29) *bursae copulatrix* narrow, nearly parallel, arises anteriorly; *fertilization tubes* a series of conjoined transparent, flexible lamellae coiled against a central core.

*Natural History.* No data available.

*Distribution.* Known only from the type locality.

*Material examined.* One male, one female, one juvenile (type collection).

### ***Tinus ursus* new species**

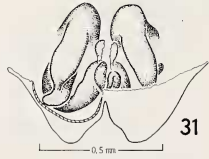
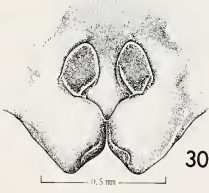
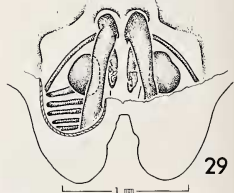
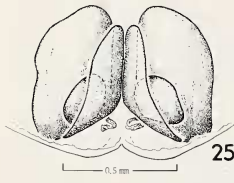
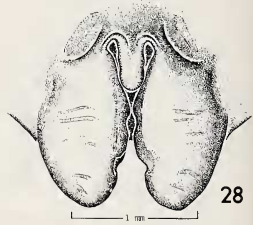
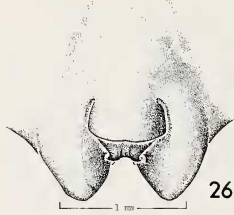
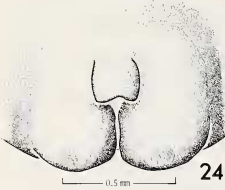
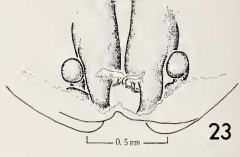
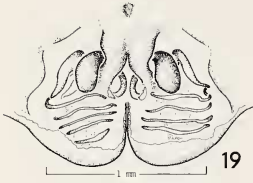
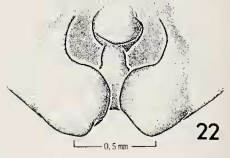
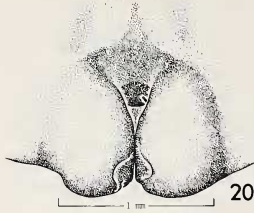
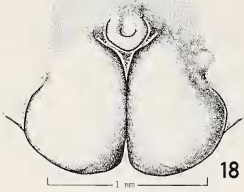
Figures 7, 30, 31

*Types.* A female holotype, five female paratypes, and four juveniles from Rincón de Osa, Costa Rica, 27 February 1967, collected by Carlos E. Valerio. Holotype deposited in the Museum of Comparative Zoology, and paratypes deposited in the Museo de Zoología, University of Costa Rica.

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Figures 8-17, Male palpi of species of *Tinus*. Figs. 8-9, *T. nigrinus* F. Pickard-Cambridge, right palpus. 8, Ventral view. 9, Prolateral view. Figs. 10-11, *T. peregrinus* (Bishop), right palpus. 10, Ventral view. 11, Prolateral view. Figs. 12-13, *T. tibialis* F. Pickard-Cambridge, left palpus. 12, Ventral view. 13, Prolateral view. Figs. 14-15, *T. minutus* F. Pickard-Cambridge, right palpus. 14, Ventral view. 15, Prolateral view. Figs. 16-17, *T. palictus* n. sp., right palpus. 16, Ventral view. 17, Prolateral view.

Note the exposed embolus tip in Figs. 12 & 13. Normally it is contained in a concavity behind the conductor.



*Etymology.* The name is from the latin noun for bear.

*Diagnosis.* The length of the carapace, ranging between 3.5 mm and 3.9 mm, places its size, without overlap, between the smaller *T. minutus* and the remainder of the species which are larger. The epigynum is distinctive with a pair of oval atria.

*Description.* *Carapace:* average length of females 3.63 mm (3.5-3.9 N=6); broad dark median band, narrow light submarginal bands; dusky marginal band. *Legs:* (1-2)-4-3. *Abdomen:* median dark band without typical lateral, large indentations; narrow light bands within median dark bands converge posteriorly (Fig. 7). *Epigynum:* (Fig. 30) *lateral elevations* in contact; *median elevation* widest posteriorly, joined to lateral elevations, narrowed into an isthmus anteriorly which separates two large oval atria. *Internal copulatory apparatus:* (Fig. 31) *bursae copulatrix* moderately broad, arises anteriorly; *fertilization tubes* curved, relatively short.

*Natural History.* According to Carlos E. Valerio, his field notes for collection number CEV-366 contain the following information: ". . . adult females rolled green leaves to use as retreats. These retreats were found near the water (5-15 cm above water level). Many females had egg sacs at time of collection, holding them with the chelicerae against the sternum. Males were not found. Immatures (if the same species) had small webs located mainly in the holes of chewed up leaves . . ." (1976). A simple ovate-lanceolate leaf with serrate margins from an unidentified plant is in the collection jar. The leaf measures 4 cm × 10.5 cm and has the margins tied together to form a tube of 1.25 cm in diameter. Debris in the retreat includes spiderlings and the appendages of a single damselfly (Calopterygidae).

*Distribution.* Known only from the type locality.

*Material examined.* Six females, seven juveniles. Males unknown.

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Figures 18-31, Epigyna of species of *Tinus*. Figs. 18-19, *T. nigrinus* F. Pickard-Cambridge. 18, Ventral view. 19, Dorsal view. Figs. 20-21, *T. peregrinus* (Bishop). 20, Ventral view (note base of embolus protruding from atrium). 21, Dorsal view. Figs. 22-23, *T. tibialis* F. Pickard-Cambridge. 22, Ventral view. 23, Dorsal view. Figs. 24-25, *T. minutus* F. Pickard-Cambridge. 24, Ventral view. 25, Dorsal view. Figs. 26-27, *T. prusius* n. sp. 26, Ventral view. 27, Dorsal view. Figs. 28-28, *T. palictus* n. sp. 28, Ventral view. 29, Dorsal view. Figs. 30-31, *T. ursus* n. sp. 30, Ventral view. 31, Dorsal view.

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